

## HANDHELD WEAPON

### FIELD OF THE INVENTION

The present invention generally relates to handheld weapons which in connection with Martial Arts are often referred to as '*self defense weapons*', suitable for protecting a victim against a barehanded assailter or one carrying a cold handheld weapon, e.g. a knife, and further for practicing a non-lethal attack on a potential attacker, or in order to gain control over an individual without having to apply excessive force.

### BACKGROUND OF THE INVENTION AND PRIOR ART

The increase in violent crime and the need for law officers and the like to control individuals, result in that more people carry different types of weapons, e.g. knives, firearms and other deadly weapons, which form potential danger also to the victim and to the environment, not to mention the liability behind such acts. There is thus an increasing need for less-than lethal handheld weapons for warding-off an attacker with possibly injuring the attacker, as in the case of self defense, to thereby allow the victim to flee, or for controlling an individual, e.g. for carrying out an arrest by law enforcement personnel, etc.

Many types of handheld self defense implements have been proposed, some of which are in the form of clubs or batons held by the defender. However, such devices are prone to being grasped by a potential attacker whereby he may be able to wrench the device from the defender's hands and in turn expose the defender to more danger. Thus, it is desired to provide a small device which may be inconspicuously carried. However, compact self defense weapons are useful,

if at all, in striking defensive blows on the attacker, and not in use in warding-off an attack, like in the case of parrying knife blows. Furthermore, such compact devices are usually not fit for controlling an individual, i.e. applying some pain to a person for carrying out an arrest, etc.

U.S. Patent No. 5,829,643 discloses a self defense device including a grasping member adapted for grasping thereof in a user's hand, a plurality of spaced spikes protruding downward from the grasping member, and an end spike protruding from a second end of the grasping member. A self-defense chemical irritant is disposed within a hollow interior chamber of the grasping member and an actuator mechanism is provided at a first end of the grasping member for effectuating release thereof. The grasping member alternatively functions as key-chain wherein a key-ring is provided at the second end thereof.

U.S Patent Application No. 2003/0109315 discloses a hand-held personal defense weapon, including an elongate grip for being held in and grasped by a closed hand of a user and first and second enlarged, solid impact elements formed of a hard, durable material carried on first and second opposed ends of the grip, each of the impact elements including a distal impact zone of reduced surface area for permitting the weapon to be swung in either a forehand, backhand, downward or uppercut stroke against an assailant.

U.S. Patent No. 5,556,003 discloses a hollow housing defining an elongate handgrip including a strike bar connected to the housing and extending forwardly in spaced relation from the handgrip so that the hand of the user may surroundingly grip the handgrip with the strike bar exposed on the outside of the hand. The strike bar serves as a visible deterrent to an attacker may be used as a defensive weapon against the attacker. Fitted within the housing there is an aerosol canister of a defense fluid, such as tear gas and a battery-powered siren. The apparatus further includes a movable actuator button for selectively activating the alarm or the alarm and the canister of defense fluid.

WO 90/07959 discloses a hand weapon comprising a cudgel with a central hand grip portion and cylindrical striking end portions separated from the hand

grip portion by stop surfaces. The hand grip portion has a finger grip portion and first and second abutment surfaces are adapted to be engaged by the tip of the thumb and the heel of the hand when the hand weapon is in use. A thong is adapted to be passed through an aperture in the abutment surface which engages the heel, the thong being adapted to be passed about the user's fist to prevent accidental loss.

U.S. Design Patents Nos. 304,063 and 352,339 discloses handheld devices comprising a gripping portion with a spike projecting therefrom. U.S. Design Patents Nos. 324,610 and 365,622 disclose a handheld self defense weapon comprising a gripping portion and finger protection loops. Some of the above are fitted with a connecting means for attaching keys thereto.

It is an object of the present invention to provide a novel handheld self defense weapon which is compact and easily concealable on the one hand and, on the other hand, is useful both as a defense article for stopping parrying knife (or other items) blows and for delivering an opponent a debilitating yet non-lethal blow, thus allowing the user of the hand weapon to gain control and compliance of an opponent without unnecessary or excessive force.

#### SUMMARY OF THE INVENTION

The present invention calls for a fist-held weapon suited for stopping knife and other items attacks, as well as for conveying debilitating yet non-lethal blows and for applying concentrated pain in order to gain control over an individual without having to apply excessive force to an opponent.

According to the present invention there is provided a handheld defense weapon comprising a hand grip portion fitted at a first end thereof with a first spike and at a second end thereof with a second spike, said spikes facing in the same direction and a third spike at the first end extending in an opposite direction. Some or all of the spikes may be at least 3 centimeters in length.

According to some embodiments of the invention the weapon may further comprise some other functional portions, for example:

- at least one finger ridge extending between said first and second spikes;
- a fourth spike projecting between the index finger and the middle finger, said fourth spike facing in the same direction as the first and second spikes;
- a bulging portion at either end, whereby when the weapon is gripped said bulging portion laterally projects from a fist;
- a fifth spike at the second end, whereby when the weapon is gripped said fifth spike laterally projects from a fist.

The weapon may be gripped about the first and third spikes, whereby the weapon may be manipulated between a first gripping position where it is grasped by an individual's fist over the hand grip portion, and a second position where it is gripped about the first and third spikes, said manipulation carried out by rotation about the index finger.

The weapon may also have any one of additional features, such as:

- being disguised by a fur-like material applied thereto;
- serving as a key holder by attaching a key ring thereto;
- the hand grip portion may be further fitted with a utility tool (e.g., one or more of the spikes may be designed as a screwdriver, etc.);
- the hand grip portion may be fitted with a power source and an activating mechanism for illuminating a light emitting element integrated with the weapon;
- the hand grip portion may be fitted with a compartment holding an irritating material (e.g. a tear gas or a skin irritating material), selectively dischargeable;
- the grip portion may be fitted with an audible alert generating module, e.g., an electronic circuit or, according to a specific embodiment, the audible alert generating module is a gas discharge horn, optionally activated by discharge of an irritating gas;
- the weapon may be fitted with a blow whistle;

- at least the hand grip portion may be padded.

The design of the weapon renders it suitable also for use as a bag carrier wherein the bag is suspendable from the device by hanging handles of the bag on the first and second spikes.

According to another aspect of the present invention there is provided a kit comprising a handheld defense weapon comprising a hand grip portion fitted at a first end thereof with a first spike and at a second end thereof with a second spike, said spikes facing in the same direction and a third spike at the first end extending in an opposite direction; and an instruction manual teaching how to use said weapon and how to train using same, where said manual is, for example, an illustrated publication or a digital carrying medium.

#### BRIEF DESCRIPTION OF THE DRAWINGS

In order to understand the invention and to see how it may be carried out in practice, some embodiments will now be described, by way of non-limiting examples only, with reference to the accompanying drawings, in which:

**Figs. 1A and 1B** are a perspective view and a top view, respectively, of a weapon in accordance with a first embodiment of the present invention;

**Figs. 2A and 2B** are top views illustrating different embodiments of a weapon in accordance with the present invention;

**Figs. 3A and 3B** are a perspective view and a top view, respectively, of a weapon in accordance with still another embodiment of the present invention;

**Figs. 4A to 4H** are perspective views of different modifications of a weapon in accordance with embodiments of the invention;

**Figs. 4I and 4J** are side views of additional modifications of a weapon in accordance with an embodiment of the invention;

**Figs. 4K and 4L** show how the weapon, according to the modification illustrated in Fig. 4J, may be used; and

Figs. 5A and 5B illustrate the weapon in accordance with the present invention in a first gripping position and in a second gripping position, respectively.

#### DETAILED DESCRIPTION OF SPECIFIC EMBODIMENTS

Turning first to the embodiments seen in Figs. 1A and 1B, there is illustrated a handheld defense weapon generally designated 10 comprising a hand grip portion 12 fitted at a first end 14 thereof with a first spike 16 and at a second end 17 with a second spike 18. Intermediate the first and second 16 and 18 spikes there are three finger ridges 20A, 20B and 20C which together with a curved back portion 24 of the grip portion 12 provide a tool for comfortable gripping by an individual's fist.

The distance between the first spike 16 and the second spike 18 is such so as to comfortably accommodate a fist firmly gripping the handle portion 12. Obviously, the weapon 10 may be provided in different sizes, depending on the hand size of an individual and, for example, it may be manufactured in several sizes, e.g. for young individuals, adults and in extra large size for individuals having large palms.

Further noted at the first end 14 of the weapon 10, there is provided a third spike 30 extending in an opposite direction with respect to the first spike 16. The weapon 10 is made of rigid material, e.g., plastic, metal, wood, etc. Alternatively, the weapon 10 may be made of a soft material such as foam or rubber, in order to be used for training purposes.

Furthermore, the first and second spikes 16 and 18 respectively, project from the handle portion 12 to an extent such that they project beyond the fisted fingers to thereby protect the fingers of an individual using the weapon while delivering an opponent a blow or whilst stopping a preying attack by an opponent. The lengths of the spikes as well may be manufactured in different sizes appropriate for use by individuals having different sized hands.

The edge of each of the spikes namely **16A**, **18A** and **30A**, respectively, may be slightly rounded, as in the embodiments illustrated herein the specification, or may be pointed.

In use, the weapon **10** is useful both as a defense article for stopping preying knife blows or blows by other items, and also for delivering an opponent a debilitating yet non-lethal blow. Furthermore, a weapon held by an opponent, e.g. a knife or other offensive tools, may be extracted by using one of the spikes of the weapon **10**, typically the second spike **18**.

The weapon **10** may be held in a first gripping position as discussed hereinabove and as illustrated in Fig. 5A, wherein the gripping portion **12** is firmly grasped by an individual's fist **15**, and at a second position, as illustrated in Fig. 5B, where a weapon **11** is gripped about the first spike **16** and the third spike **30** (not visible), with the handle portion **12** projecting between the individual's index finger **19** and middle finger **19'**, typically with the first spike **16** grasped by the index finger.

In this second gripping position, the second spike **18** is suitable for extracting a weapon held by an opponent and further for delivering blows to an opponent.

The device may also be used for applying moderate to severe pain to an individual so as to gain control over the individual without having to apply excessive force. This is obtained by relatively small contact areas at the edges of the spikes. This is suitable for law enforcement personnel for overcoming an individual as well as for allowing a potential victim to flee.

The actual degree of smallness of the contact area of the edges may differ according to the intended use. For a person who carries the weapon **10** to ward off an attacker who may prey on him by surprise, the contact area is very small, since a relatively small amount of force is thereby needed to effectively use the weapon. Moreover, such a person would not use the weapon on a regular basis, and therefore cannot rely on oft-practiced skill which would come as a result of frequent use of the weapon, resulting in the need for an inherently more effective

weapon. However, law enforcement personnel, who may use the weapon on a regular basis and bear more liability for the safety of the individual over which they intend to apply force, may opt for a more blunted spike having a larger contact area.

Turning now to the embodiment of Fig. 2A, there is illustrated a weapon **50** which is similar to that of the embodiment of Figs. 1A and 1B and accordingly, like elements are designated by the same reference numbers with a prime indication, with the exception that instead of ridge **20A** as in Figs. 1A and 1B, there is provided a fourth spike **52** which in the first gripping position is intended for extending between the index finger and the middle finger. It is noticed that the fourth spike **52** is slightly shorter than the first spike **16'** and the second spike **18'**. This arrangement is suitable for improving grip of the weapon **50** and further whilst the weapon is gripped in the second gripping position (i.e., by the first and third spikes **16'** and **30'**) the fourth spike **52** provides protection to the individual's index finger. Furthermore, the weapon **50** comprises at its second end **54** a fifth spike **56** which may be used in stab-like blows and further for applying severe pain by engaging an opponent with the pointed edge of this spike.

The weapon **50** is provided adjacent its second end **54** with a hole **58** which may be suitable for attaching a key ring whereby the device serves further as a key holder.

With further reference to Fig. 2B, there is illustrated a self defense weapon generally designated **62** which resembles the previous embodiment illustrated in Fig. 2B with the exception that adjacent a second end **66** there is a rounded bulge **68** whereby, when the device is in use, it may offer a powerful blow to an opponent or for applying painful pressure on an opponent for controlling him.

The embodiment illustrated in Figs. 3A and 3B illustrates still another embodiment of a weapon in accordance with the present invention generally designated **72** which in fact is a combination of the embodiments previously discussed. The embodiment comprises a gripping portion **74** having an

ergonomic shape with a curved back portion 76, two finger ridges 78A and 78B and a fourth spike 80 to be received between the index finger and the middle whilst the weapon 72 is gripped at its first gripping position (i.e., grasped by an individual's fist over the handgrip portion). Furthermore, the weapon 72 comprises first, second, third and fifth spikes 84, 86, 88 and 90, respectively and a bulging portion 92 adjacent the first end 94 of the weapon.

It is appreciated that the tool as illustrated in any of its embodiments disclosed here in the specification may be manipulated between the first gripping position and the second gripping position by swinging it about the individual's index finger with the thumb applying rotation force over the third spike and whilst the remaining fingers are temporarily removed until completing the swinging action, where they then gain gripping force over the third spike.

The weapon 72 in accordance with the embodiment of Figs. 3A and 3B comprises two holes 98 and 100 adjacent the respective ends of the weapon whereby, for example, one hole may be used for attaching a key ring or a belt clip thereto and the other hole may be used for introducing a fist thong (not shown).

Turning now to Figs. 4A-4D, there are illustrated further modifications and embodiments of the weapon in accordance with the present invention wherein, for the sake of exemplifying only, the weapons illustrated in Figs. 4A-4D are referring to embodiments corresponding with that disclosed in connection with Figs. 3A and 3B. However, the artisan will appreciate that the modifications exemplified in connection with Figs. 4A-4D may be applied to any other embodiment and using different combinations thereof.

In the embodiment of Fig. 4A, there is illustrated a weapon in accordance with the present invention generally designated 120 fitted with an illuminating arrangement comprising a battery compartment (not seen in this figure) received within a handle portion 122, an activating switch 124 received within a depression 126, so as to minimize the likelihood of damage to the switch 124 or of unintentional activating thereof, and a light emitting source, e.g. a LED 128.

The battery (not shown) may be a "finger-type" or a "cell-like" power source and the battery may be replaceable or not.

In the embodiment of Fig. 4B, there is illustrated a weapon 132 which, again, is similar to the embodiment of Figs. 3A and 3B whereas at a first end 134 thereof there is provided an irritating gas discharge arrangement comprising a compressed gas canister (not seen) received within a handle portion 136, an activating switch 138 which is also received within a depression 142 to prevent unintentional activation thereof and further, the switch 138 may be fitted with a security latch 144 to prevent unintentional operation thereof. The irritating gas may be a tear gas, a skin irritant or other such known gas or fluid dischargeable through a discharge opening 146.

In the embodiment of Fig. 4B, there is further illustrated, at a second end 152 of the weapon 132, a siren/alarm module powered by a electric power source typically a cell battery or the like received within handle portion 136, and being activated by an activating switch 156 for generating a loud alert audible signal through a speaker 158.

Fig. 4C illustrates a weapon 168 in accordance with still another modification of the invention wherein the weapon is fitted with a key ring 170 and the entire weapon is disguised by a fur-like coat 174 applied thereto. This arrangement provides the weapon with an innocent-like appearance, and further imparts a friendly look. Obviously the fur-like material 174 does not interfere with the sturdy grip of the weapon 168, in either of its gripping positions.

In Fig. 4D, there is illustrated a weapon 180 in accordance with still another modification of the invention wherein instead of a fifth spike as in the previous embodiments, there is provided a utility tool 182, e.g., a flathead screwdriver bit. Furthermore, the back portion of the gripping portion 188 is padded by a comfortable resilient padding material 190, e.g. foam, rubber, etc.

Fig. 4E illustrates a weapon 200 in accordance with still another modification of the invention, wherein, instead of the bulging portion 92 shown in Figs. 3A and 3B, there is provided a metal detecting wand 202, such that is

typically used by security personnel for inspections at ingress points of public and private buildings. Typically, a person wishing to bypass such an inspection may become hostile. The security personnel would have to restrain or subdue such an individual, making it advantageous to provide the weapon 200 of the present invention coupled with a security device already carried by security personnel.

Fig. 4F illustrates a weapon 210 in accordance with a still further modification of the present invention, wherein there is provided an extendable baton 212 from a first end 214 thereof. The baton 212 comprises several hollow tubular segments 216, each of successively smaller diameter. The most distal section 218 may be sealed at the distal end, as shown. Each segment 216 is further tapered so that distal end 220 thereof is of slightly smaller diameter than the proximal end 222 of the distally adjacent section. In a retracted position, the segments 216 are adapted to concentrically nest. In order to extend, the user grasps the weapon 210, and snaps his hand so that the segments 216 are thrust from the weapon 210 at a high speed. The sections are designed, as described above, to tightly fit within one another to form the baton 212 as shown. In order to retract the baton 212, a force is applied longitudinally to the top 224 of the extended baton. The baton 212 may retract fully into the weapon 210, protrude slightly, or protrude the full length of one segment 216.

Fig. 4G illustrates a weapon 230 according to a still further embodiment of the present invention, wherein it is imprinted with a motif 232 for decorative purposes only. There may optionally be provided a sheath (not shown) which snuggly fits the weapon 230, said sheath being replaceable and comprising, on an outer surface thereof, a motif. The user may change the appearance of the weapon 232 by replacing the sheath. Alternatively, the bulging portion 92 shown in Figs. 3A and 3B may be replaced by a likeness 234 of a figure, as seen in Fig. 4H, which may be a licensed character. The likeness 234 is preferably made of a rigid material, so that it may have the same function as the bulging portion 92 as described with reference to Figs. 3A and 3B.

Fig. 4I illustrates a weapon 240 according to a still further embodiment of the present invention, comprising an integral clip 242. The clip 242 is generally flat and is attached to the weapon 240 at a first end 244. At the second end thereof is provided a bulge 246, said bulge adapted to bias the clip 242 slightly away from the weapon 240 while the bulge remains in contact therewith. In this way, the weapon 240 may be easily clipped to a pocket or a car windshield visor for easy access thereto.

Fig. 4J illustrates a weapon 250 in accordance with a still further modification of the present invention, wherein there is provided a wrist strap 252, optionally connected thereto by a ring 254. The wrist strap may be used to prevent loss of the weapon 250, especially during a confrontation. It is also particularly useful for law enforcement agents. When subduing a suspect or agitator, the agent may use the weapon 250, while the wrist strap 102 is looped, as shown in Fig. 4K about the wrist of a first hand, being the hand initially grasping the weapon, to apply a force to the inside of the suspect's wrist. The agent may then use a second hand, being his free hand, to grasp the weapon 250, and temporarily release the weapon from the grasp of the first hand. He then maneuvers the first hand so that the wrist strap 102 encircles the suspect's wrist, and grasps the weapon with the first hand, as shown in Fig. 4L. This technique results in the suspect being restrained by his wrist. This technique may be modified slightly so as to restrain the suspect by both wrists, as the situation warrants.

Alternatively, the weapon 250 may be attached directly to handcuffs or manacles (not shown) typically used by law enforcement personnel. In this way, one wishing to restrain a suspect or the like with handcuffs has instant access to the weapon 250 in a situation when resistance is met.

Whilst some embodiments have been described and illustrated with reference to some drawings, the artisan will appreciate that many variations are possible which do not depart from the general scope of the invention, *mutatis, mutandis*.